

CITY OF SAN DIEGO, CALIFORNIA
COUNCIL POLICY

CURRENT

SUBJECT: AUDIBLE PEDESTRIAN TRAFFIC SIGNALS FOR THE BLIND
INTERSECTION EVALUATION PROCEDURE
POLICY NO.: 200-16
EFFECTIVE DATE: November 18, 1985

BACKGROUND:

Audible pedestrian traffic signals are used in conjunction with standard pedestrian activated traffic signals to emit two distinct audible signals that resemble bird calls; one for the north-south walk direction and another for the east-west walk direction. They are used to assist blind and visually impaired persons and other disabled persons of all ages to cross at designated streets and intersections.

PURPOSE:

The purpose of this evaluation policy is to set forth factors to be used by the Committee for the Removal of Architectural Barriers (CRAB) in developing a priority listing of signalized intersection candidates to be retrofitted with audible devices that will provide guidance for the blind community and visually impaired persons and other disabled persons of all ages to cross certain streets.

POLICY:

It is the policy of the City Council that the retrofitting of existing traffic signals with audible devices shall be based on factors established herein and that such measurements and computations as may be required in determining priority rating of candidate locations shall be the responsibility of CRAB.

It should be noted that in special situations, an audible traffic signal should not be installed because of the adverse affect it could have on pedestrian safety as a result of the overall traffic circulation pattern of an area, or unusual geometric conditions where audible signals would not provide the safety benefits necessary for the blind or visually impaired individuals to cross a street. It should also be noted that some traffic signals cannot be retrofitted with audible traffic signals without major costly modifications. Retrofitting of traffic signals with audible devices shall be subject to approval by the City Engineer.

Important: Audible signals are utilized to help properly trained blind and visually impaired travelers recognize when a walk signal is operating in a given direction. An audible signal may enhance the safety of blind travelers in two ways:

1. Lessens the chance of a blind pedestrian misjudging when the walk phase is operating, thereby lessening the chance of accidentally crossing against a signal.

2. Helps blind pedestrians recognize immediately when the walk phase begins, permitting them to cross the street in a timely fashion, thereby lessening the chance of being in the intersection when the signal changes.

However, it is important to recognize that the audible signal does not and cannot assure the blind pedestrians that there will be no potential traffic conflicts while crossing when the audible signal is operating. In particular, the blind traveler should be aware of at least four possible conflicts.

1. Vehicles may be still clearing the intersection when the audible signal comes on.
2. Vehicles may fail to stop for the red light. This is particularly common for motorists attempting to enter on a yellow light.
3. Motorists may stop and make a right turn on red while watching traffic on their left but may fail to notice pedestrians on their right.
4. Vehicles may have right and left turns on the same phase as the pedestrian.

Because of these potential conflicts, it is important that the blind or visually impaired traveler exercise due caution for his or her well-being when crossing a street, whether or not it is equipped with an audible signal. It is especially important that blind and visually impaired travelers be properly trained by orientation and mobility specialists in safe travel techniques on the public right-of-way.

EVALUATION PROCEDURE: (see attached "Evaluation Form.")

The following basic considerations and evaluation factors shall be utilized to determine whether a location is eligible to be a candidate for audible signals and to determine its relative position on the priority list. Evaluation and scoring of factors will be conducted by an evaluation team consisting of an orientation-mobility specialist, a visually impaired/blind traveler and a traffic engineer. Candidate locations will be provided by the overall Committee for the Removal of Architectural Barriers. Candidate locations will be evaluated by means of the sample evaluation sheet attached.

I. BASIC CONSIDERATIONS

Audible signals normally will be considered for installation only if the following conditions are met:

- A. Intersection must be signalized.
- B. Signals must be susceptible to retrofitting.
- C. Signals should be equipped with pedestrian signal actuations. (See also section on "Signals Without Pedestrian Actuations.")

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- D. Location must be suitable to installation of audible signals, in terms of surrounding land use, noise level and neighborhood acceptance.
- E. There must be a demonstrated need for the audible signal device.

II. EVALUATION FACTORS

The following factors shall be used to establish a priority listing for potential audible traffic signal candidates. Candidates will be arranged in priority order of those with the highest total points (60 points maximum) on top and then in descending order. Individual factors will be scored 1 to 5, with 1 for the lowest point evaluation, to 5 for the highest. The scoring of factors will be conducted by an evaluation team consisting of a mobility specialist, a visually impaired/blind traveler and a traffic engineer. Candidate locations will be provided by the Committee at large.

A) Intersection Safety

1. Accident Records: Past pedestrian accident experience at the intersection will be used as an indication of potential safety performance. Points will be based on pedestrian accidents reported by the Police Department.

<u>Pedestrian Accidents</u>	<u>Period</u>	<u>Points</u>
1	4 yrs	1
2	"	2
3	"	3
4	"	4
5 or more	"	5

2. Intersection Configuration: The number of approaches to an intersection and their geometric configuration (offset, skewed, etc.) affect the ability of the blind and visually impaired persons crossing the roadway. In particular, traffic at 3-leg intersections tends not to provide adequate audible clues for the blind to permit them to effectively judge the signal phases.

<u>Configuration</u>	<u>Points</u>
4-leg right angle intersection	1
3-leg tee intersection	2
3 or 4-leg skewed intersection	3
4-leg offset intersection	4
Other complex or multiple leg intersections	5

Note: Intersections with 5 or more legs will require special design.

3. Width of Crossing: Wider streets are more difficult for blind travelers to cross. If each leg of the intersection has a different width, points will be assigned on the basis of the widest street on which pedestrians are permitted to cross. Crossing width will be measured at the point pedestrians normally cross the street. Islands and medians will be included in the total crossing distance even if they are equipped with separate pedestrian signal actuators. Blind pedestrians have difficulties interpreting traffic clues at medians and islands. Efforts should be made to permit the blind to cross in one continuous movement. In such cases, signal timing should be extended to accommodate the full crossing. Divided streets with or without a pedestrian signal actuator in the median will be handled as a single crossing, with the width measured across the entire street.

<u>Width of crossing</u>	<u>Points</u>
40 feet or less	1
41 to 52 feet or less	2
53 to 68 feet	3
69 to 78 feet	4
79 feet or more	5

4. Vehicle Speed: The speed of approaching traffic reflects the ability of approaching traffic to stop for a pedestrian clearing the intersection as the lights change. Audible signals help blind pedestrians get a timely start at the beginning of the walk phase, thereby permitting clearing the intersection in a timely manner. Points are assigned on the basis of the 85 percentile speed on the fastest approach leg. More points are assigned on the basis of higher speeds.

<u>Speed Range</u>	<u>Points</u>
0-25 mph	1
26-30	2
31-35	3
36-40	4
41 or over	5

B) Pedestrian Usage

Blind pedestrians share many characteristics with the sighted population in that they go to public places, business, social, educational and medical facilities. At the same time they have special needs. For example, they may have a greater reliance on public transportation than sighted persons. Audible signals should be placed with the view of improving mobility of blind persons and making more facilities accessible to them. Proximity of signals to these facilities may assure a greater degree of utilization.

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1. Proximity to facilities for blind or visually impaired: This includes the Department of Rehabilitation, Social Security offices, Blind Service Center, Blind Recreation Center and other similar blind oriented facilities. Special consideration may be given to senior citizens complexes or public housing facilities that have one or more blind or visually impaired persons in residence. Points are assigned on the basis of blocks or distance (1 block equals 400 feet) from proposed audible signal site to subject facility. The closer the two are, the more points are assigned.

<u>Proximity</u>	<u>Points</u>
4 to 6 blocks	1
3 blocks	2
2 blocks	3
1 block	4
at subject facility	5

2. Proximity to key facilities utilized by all pedestrians (Blind and sighted): This includes medical, educational, social, recreational, shopping, commercial, business, public and governmental facilities. Points are assigned on the basis of blocks or distance (1 block equals 400 feet) from proposed audible signal site to subject facility. In case of multiple facilities, points will be assigned on the basis of the closest facility.

<u>Proximity</u>	<u>Points</u>
4 to 6 blocks	1
3 blocks	2
2 blocks	3
1 block	4
at subject facility	5

3. Access to public transit: Because blind and visually impaired persons rely heavily upon public transportation (bus or trolley), special consideration will be given to those proposed audible signal sites that have heavy general use, serves any of the facilities indicated above, (Ref. B-1 and B-2), or serves as a transfer point and serves 2 or more transit routes within a one-block walking distance.

a) Number of transit stops and/or transit routes within one block of proposed audible signal site.

<u>Number of Routes and Stops</u>	<u>Points</u>
1-2 routes and 1 stop	1
3 or more routes and 1 stop	2
1-2 routes and 2 stops	3

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3 or more routes and 2 stops	4
3 or more routes and more than 2 stops	5

- b) Passenger usage is based upon the total passengers boarding and debarking each day at a transit stop or transfer point within a one-block walking distance.

<u>Passengers boarding and debarking each day</u>	<u>Points</u>
100-249	1
250-499	2
500-999	3
1000-1499	4
1500 and over	5

C) Traffic Conditions

Vehicle volumes, traffic distribution, traffic congestion and flow characteristics may assist or impede the blind traveler in crossing an intersection. Blind pedestrians can function best when crossing signalized intersections that are at right angles with a moderate but steady flow of traffic through the intersection on each leg and with a minimum of turning movements (right or left turns). Traffic that stops on each leg during each signal cycle is particularly helpful. Traffic that is either light, or very heavy, or erratic in its flow makes it difficult for the blind traveler to pick up audible clues as to whether the light is red or green. In such cases, audible signals will assist in determining when it is possible to cross the street. Points may be assigned by the evaluation team based upon their perception of the relative importance of each of these factors (which are not necessarily dependent upon the total average daily traffic). Candidate locations may score up to a maximum of 5 points for each of the following factors depending upon overall traffic distribution.

<u>1. Heavy traffic flow</u>	<u>Vehicles per hour</u>	<u>Points</u>
Approach traffic on all legs is in excess of 2000 vehs/hr during any peak hour	2000-2999	1
	3000-3999	2
	4000-4999	3
	5000-5999	4
	6000 and over	5

<u>2. Light traffic flow</u>	<u>Vehicles per hour</u>	<u>Points</u>
Approach traffic on all legs is less than 900 vehs/hr during any one-hour period between	800-899	1
	700-799	2
	600-699	3

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6 AM and 6 PM	500-599	4
	under 500	5

3. Uneven traffic flow Points

Platoons or approach traffic flow may not coincide with the signal phasing on any leg, thus making it difficult for blind travelers to detect and determine the appropriate signal phase 0-5

D) Mobility Evaluation

Each intersection being considered for audible signals should be evaluated by an orientation and mobility specialist. Based on the judgment of the O-M specialist and the evaluation team, additional points may be assigned based on observed or special conditions not adequately covered by any of the previous factors.

	<u>Points</u>
1. Mobility and miscellaneous factors	0-5

Signals Without Pedestrian Actuations

Signalized intersections without pedestrian actuations may be considered for evaluation under this priority system, provided the following conditions are met:

1. There must be a demonstrated problem or need that can be alleviated by the installation of an audible signal.
2. The evaluation team must unanimously concur with the need.
3. Appropriate pedestrian actuation buttons and circuits must be provided as part of the audible signal installation.

Audible Signals at New Signal Installations

Audible signals will normally not be installed as part of a new signal installation. However, new signal locations will be eligible for retrofitting on a priority basis along with other existing signal locations covered under this policy.

HISTORY:

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Adopted by Resolution R-264470 11/18/1985

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AUDIBLE TRAFFIC SIGNAL
EVALUATION FORM

LOCATION: _____
DATE: _____ DAY: _____ BY: _____

- | I. Basic Considerations: | <u>Yes</u> | <u>No</u> |
|--|------------|-----------|
| A. Intersection is signalized | _____ | _____ |
| B. Signals are susceptible to retrofitting | _____ | _____ |
| * C. Signals are equipped with pedestrian actuations | _____ | _____ |
| D. Location is suitable for audible signals | _____ | _____ |
| E. There is a demonstrated need for audible signals | _____ | _____ |

II. Evaluation factors (max 5 points for each): Points

- | | |
|---|-------|
| A. Intersection safety | |
| 1. Accident records | _____ |
| 2. Intersection configuration | _____ |
| 3. Width of crossing | _____ |
| 4. Vehicle speed | _____ |
| B. Pedestrian usage | |
| 1. Proximity to facilities for the blind | _____ |
| 2. Proximity to other key facilities | _____ |
| 3. Access to public transit | |
| (a) presence of transit stops | _____ |
| (b) passenger usage | _____ |
| C. Traffic conditions | |
| 1. Heavy traffic flow | _____ |
| 2. Light traffic flow | _____ |
| 3. Uneven traffic flow | _____ |
| D. Mobility Evaluation | |
| 1. Mobility and other miscellaneous factors | _____ |
| Total points (60 points maximum) | _____ |

Comments: _____

* Ref. section on "Signals Without Pedestrian Actuations."